

TITLE OF INVENTION

SEALING A GASKET JOINT

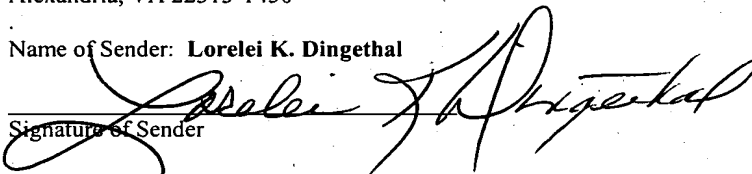
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TITLE OF INVENTION

[0001] Sealing A Gasket Joint.

BACKGROUND OF THE INVENTION

[0002] The present invention relates to gasketed joints of the type where a gasket is provided between two joined structural members, as for example, the cylinder block and combustion chamber head of an internal combustion engine.

[0003] In certain engine applications, it has been found necessary to join other members to the cylinder block in the region adjacent the cylinder head and in particular, inlet or valve deactivation manifolds over the valley or central region of an engine having banks of cylinders arranged in a V-configuration. In such engine arrangements, it is necessary to seal between the edges of adjacent individual sealing gaskets provided for sealing between adjacent pairs of sealing surfaces, such as between the deactivation manifold gasket and the head gasket.

[0004] When the gaskets are compressed by the joining of the members to be sealed, the compression of the gasket often distorts the edge of the gasket and thus sealing between adjacent gasket edges becomes extremely difficult to make provision for dimensionally; and, thus a seal between the edges of the adjacent gaskets is difficult to insure.

[0005] Furthermore, it has been desired to provide such a sealing between the adjacent gaskets without the need for in situ dispensing apparatus for injecting sealant into the joint to be sealed between gaskets because in certain engine applications, the location on the engine of the joint to be sealed at assembly precludes access to the required dispensing equipment. Additionally, the requirement for sealant dispensing equipment at final assembly of the engine would render the operation cumbersome and more costly. Also, the control of the amount of sealant ejected from the dispensing equipment has proven to be difficult and often results in stray amounts of sealant being deposited on other

parts of the engine which necessitates an additional costly cleaning operation.

[0006] Accordingly, it has been desired to provide a way or means of sealing between the edges of adjacent sealing gaskets in a manner which is simple to install and is accomplished in a manner which does not prohibitively increase the cost of the assembly.

BRIEF SUMMARY OF THE INVENTION

[0007] The present invention addresses the above-described problem by providing a technique for sealing between edges of adjacent gaskets positioned for sealing between adjoining structural members and particularly parts of an engine; and, the present invention does not require the in-situ dispensing of sealant into an area to be sealed between the gaskets prior to the assembly of the structural members.

[0008] The present invention employs forming a pocket between the adjacent edges of adjoining gaskets and disposing a sealant-filled crushable capsule in the region adjacent the pocket and squeezing the capsule and injecting the sealant therein into the pocket upon assembly of the structural members. The capsule is squeezed at the time of assembly of the structural members as they are joined to compress the gaskets therebetween. In the presently preferred practice, the capsule is filled with ambient temperature curing sealant and is particularly suitable for a capsule filled with RTV Silicone material.

BRIEF DESCRIPTION OF THE DRAWINGS

[0009] FIG. 1 is a perspective view of a pair of adjoining gaskets assembled onto a sealing surface of a structural member with the capsule containing the sealant disposed in a region adjacent the pocket between the gaskets; and,

[0010] FIG. 2 is a view of the assembled structural members with the gaskets and sealant capsule compressed therebetween in perspective with portions of the structural member broken away.

DETAILED DESCRIPTION OF THE INVENTION

[0011] Referring to FIG. 1, a first structural member to be joined is indicated at 10 as having an upper surface 12 to be sealed by suitable gasketing and includes an attachment lug or portion 14 which has a threaded bore 16 for engagement by a suitable fastener as will hereinafter be described.

[0012] Surface 12 has superposed thereon first and second adjoining gaskets 18, 20 which are adapted to have a second structural member received thereover as will hereinafter be described. The gasket 18 has a recess or pocket 22 formed therein; and the gasket 20 has a projection or tab 24 extending therefrom and into the recess 22 in relatively closely spaced relationship so as to permit movement of the projection in the recess 22 upon compression of the gaskets at assembly.

[0013] A capsule 26 filled with uncured sealant material and preferably elastomeric sealant is disposed on the surface of the projection 24 and preferably extends partially over the space between projection 24 and the recess 22 as illustrated in FIG. 1. It will be understood that alternatively the capsule 26 may be positioned on gasket 18 and extend over the pocket in recess 22.

[0014] In the presently preferred practice the capsule is formed of thin-walled, semi-rigid material, preferably having a cylindrical configuration. In the present practice of the invention it has been found particularly satisfactory to fill the capsule with elastomeric sealant capable of curing at ambient temperatures and particularly RTV silicone elastomeric material has been found satisfactory. It will be understood that although an elastomeric sealant is preferable, other types of curable viscous sealant may be employed.

[0015] Referring to FIG. 2, the invention is shown as employed in a gasketed assembly indicated generally at 30 which has a second structural member 32 to be joined by gasketing received over the upper surface of gaskets 18, 20; and, the structural member 32 is retained thereover by a threaded fastener 34 received through an aperture in a projection or lug 36 provided on the member

32 for engagement with threaded bore 16 in member 10

[0016] With continuing reference to FIG. 2, it will be observed that capsule 20 has been compressed or crushed by the compression forces of member 32 such that the viscous sealant material 38 has been ejected therefrom and extruded into the space between recess 22 and projection 24 and has cured to provide a seal therein between the undersurface of member 32 and the upper surface of the lower structural member 10.

[0017] The present invention thus provides a unique and novel technique for sealing between edges of adjacent gaskets disposed for compression sealing between structural members compressed or clamped thereover. The technique of the present invention employs a crushable capsule containing ambient curable viscous sealant disposed over the gasket edges prior to assembly of the structural members thereover in a manner which eliminates the need for in situ dispensing of sealant into the area of the gaskets to be sealed.

[0018] Although the invention has hereinabove been described with respect to the illustrated embodiments, it will be understood that the invention is capable of modification and variation and is limited only by the following claims.